BTL-09

user manual
&
user's guide

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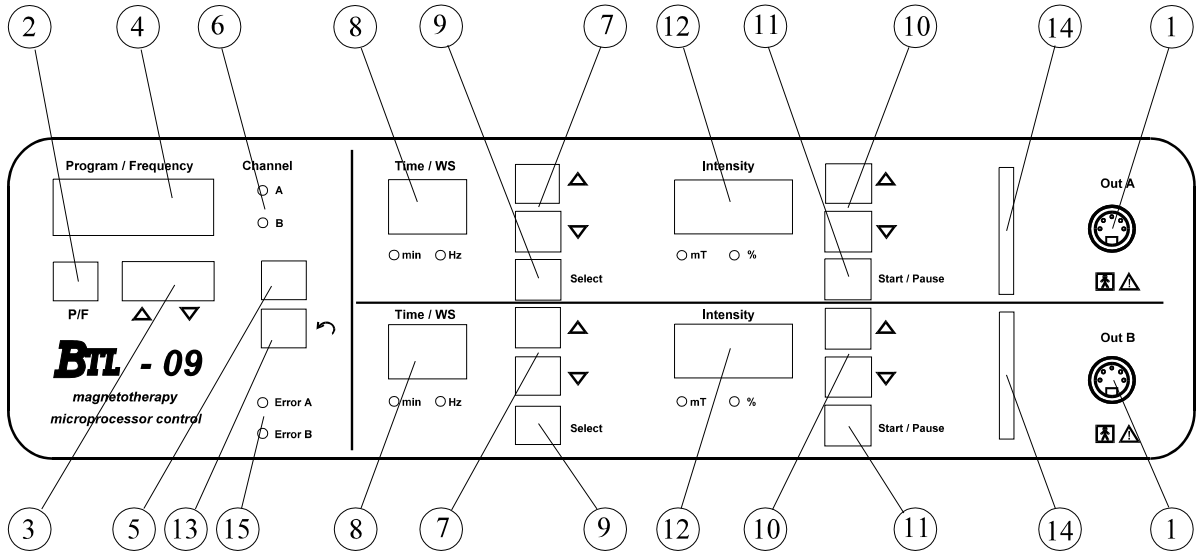
I. USER MANUAL

CONTROLS AND DISPLAYS



1. Output connectors to connect applicators.
2. Push-button to change mode ("Program" – "Frequency").
3. Two push-buttons to set program or frequency.
4. Displays set mode, number of program or frequency.
5. Push-button to change channels.
6. Control lights to signal channel in use.
7. Push buttons to set time in "Program" mode or time and frequency change (wave swing) in „Frequency„ mode.
8. Displays time or frequency change. Two control lights below signal mode in use.
9. Push-button to switch to „Frequency„ mode.
10. Two push buttons for intensity of magnetic field.
11. Push-button to start and interrupt therapy.
12. Displays intensity of magnetic field. Intensity is shown in mT if one applicator is used, and in % if adapter plug is used (signaled by LED diodes under the display). Also displays code of applicator when an applicator is connected to the instrument.
13. Push-button to set parameters of the last therapy.
14. Column bar-graph to display output.
15. Control lights to signal output failure.

OUTWARD APPEARANCE

BTL-09 is built in a lacquered metal box. Signals, displays, controls and connectors for applicators or adapter plug are located on the front panel. The mains connector, power switch, fuses and cooling ventilator are located on rear panel. Serial number, model number, and date of production are also located on the rear panel.

PRINCIPLES OF SAFETY OPERATION

1. Read carefully user manual before initial switching-on.
2. Check the parameters of mains (230V / 50Hz).
3. Check proper installation of electrical mains.
4. Place the instrument on an even hard board to assure its proper cooling.
5. Do not use the unit if the cooling fan does not start working after the instrument is switched on.
6. NEVER use damaged applicators. Electrical current damage to persons may be caused.
7. Stop the therapy at once in case of any failure.
8. Check all parameters before you start the therapy.
9. Attending personnel should keep in 1 meter distance from the applicators in use. Relevant channel should be switched off during necessary manipulation.
10. Watches, electronic devices and magnetic recording carriers can be damaged when exposed closely to applicators and cables.

11. Do not connect anything else into connectors – there is a danger of injury by electric current and/or serious damage to instrument.
12. Instrument must not be used in presence of pregnant women!

At connectors marked with this sign, current or voltage may exceed safe values. This is an instrument with BF protection. The manufacturer assures BF protection grade BF only if the instrument is used in accordance with this manual and with instructions for safety operation, and provided that only applicators supplied by the manufacturer are attached.

INITIAL SWITCHING-ON

Place BTL-09 on a level, hard surface. Make sure that switch is in 0 position. Put connecting cable into output connector on rear panel. Plug connecting cable to a mains socket 230V / 50Hz. Switch the instrument on by pressing the power switch to position 1. The cooling fan starts to work right after initial switching-on.

⇒ **Do not use the instrument if the cooling fan does not work properly!**

When BTL-09 is switched on, the channel A is set: led diode A (6) is on. Program No. 9 is set – "Program / Frequency" display (4) shows "P-09". Therapy time for both channels is set at 30 min. -- Time display /8/ shows "30". Intensity display (12) shows "..." If an applicator is connected, its code is displayed. After a few seconds, the code is replaced by "00".

CONNECTING APPLICATORS

⇒ **Only original applicators supplied by manufacturer may be used with BTL -09!**

The table below gives a list of applicators that can be used with the BTL-09 unit. Detailed technical descriptions are given later in this manual.

Code	Description
1	Big solenoid, 50 cm diam.
2	Small solenoid, 30 cm diam.
3	Ring, 30 cm diam.
4	Disc, 24x24 cm
5	Double cover, 2x24x17 cm
6	Triple cover, 59x28 cm
7	Adapter plug

Plug an applicator into connectors (1) or to adapter plug attached to connector (1). Turn the socket clockwise about 30 degrees to ensure proper contact.
If the unit is on, applicators may be changed only in set-up mode (bar-graph shows no activity).

If no applicator is connected to the instrument, "Intensity„ displays of both channels show "--". If an applicator is connected to a connector, relevant display will for about 3 seconds show its code. If adapter plug is connected to the instrument but both applicators are not connected to it, "Error" light (15) turns red. After display of code, "Intensity„ display shows intensity (in mT).

If adapter plug is used, intensity is set in %. Table of conversion of set intensity in % and mT intensity for a relevant applicator is given later in this manual.

Using adapter plug allows you to combine any of these applicators: small solenoid, ring, disc and double cover. If you use serial sequencing of triple cover and big solenoid, the driving current remains the same, but because of increased induction of these applicators the impulses are getting slower. Therefore we recommend to increase intensity in about 30%, if a combination of any of the two applicators and any of the four applicators mentioned above is used. We cannot recommend that serial sequencing of 2x triple cover, 2x big solenoid or the combination of the two be used.

SETTING CHANNELS

BTL-09 has two identical channel outputs. Select channel by push-button (5). Selected channel is indicated by control lights (6). Therapy time and intensity is set separately for each channel.

PROGRAM SETTING

The programs are set in "Program" mode indicated by "P" letter displayed at "Program / Frequency„ display (4). The instrument is automatically set up in this mode after initialization. You can also switch to this mode by pressing "P/F" push-button (2). Press push-button (3) to set A program. Hold the push-button pressed to speed up adjustment.

FREQUENCY SETTING

Set the frequency in 'Frequency" mode indicated by letter "F" displayed at "Program / Frequency" display (4). Press "P/F" push-button (2) to enter this mode. Press push-buttons (3) to set frequency in the range of 1.0 - 60 Hz. Keep push-button pressed to change data continually. Up to 20 Hz you can set frequency in steps of 0.1 Hz, above 20 Hz you can set frequency in steps of 1 Hz.
BTL-09 enables you to generate pulses with fixed and varying frequency. Average value of generated frequency is seen on "Program/Frequency" display (4). If you wish to generate pulses of stable frequency, continue directly to set therapy time. When pulses with variable frequency are needed, set magnitude of frequency change:
Press "Select" push-button (9) to get to frequency change mode (wave swing). The control light under Time / WS display (8) indicates Hz. Press push-buttons (7) to set frequency on Time / WS display, in 0.1 Hz steps for up to 10 Hz, and 1 Hz steps from 10 Hz. During generation the frequency changes around average value of about set value with the period of 90 sec. maximum. Generated frequency is moving between 1 - 60 Hz.

TIME SETTING

Therapy time is shown on Time / WS (8) display; the control light "min" below is on. If the control light "Hz" is on, switch the instrument into the time setting mode by pressing "Select" (9) push-button. To set the time (in steps of 5 minutes), press push-buttons (7). Maximum therapy time is 90 minutes (with limits described in the section "Limits to maximum intensity and therapy time"). During generation the time is counted-down in steps of 1 minute. The unit makes a sound signal when the set time has elapsed.

INTENSITY SETTING

Intensity of magnetic field is shown on "Intensity„ display (12). Intensity displayed is the maximum intensity at applicator's surface. Intensity around individual applicator is described below. Maximum reachable intensity depends on the type of applicator, program and therapy time set – see the "Limits to maximum intensity and therapy time" section. If solenoids are used, maximum intensity is around 12 mT, with other applicators the intensity is at maximum of 20 mT.

Solenoids have lower maximum intensity values, yet the set intensity is spread nearly everywhere inside solenoid. Other applicators have higher intensity limits but the intensity is concentrated solely around surface and further from the surface (around 10 cm) it rapidly decreases.

Set the intensity by pressing push-buttons (10). Intensity is set in steps of 1mT (or 5% in case of use of adapter plug). Keep the push-buttons pressed to decrease or increase value continuously. When intensity value is set (either in mT or in %), signal light under "Intensity„ display (12) is on. You cannot set intensity if an applicator is not connected or if both applicators are not connected to adapter plug.

Limits to maximum intensity and therapy time

Maximum intensity depends on type of applicator, program and therapy time. Some of the combinations do not allow setting maximum intensity. If higher intensity is required, decrease the time of therapy or use a different program.
Intensity can be set during short or zero time period. If -- during the intensity increase -- an acoustic signal is heard and yellow control signal at the top of bar-graph is alight (14), the therapy time will be limited, i.e. the therapy period cannot be set to maximum possible value.

Magnetic induction if adapter plug is used

If you use adapter plug, up to 4 applicators can be connected to the unit. If you connect two applicators to one channel, the limits described above have to be taken into account. Two applicators connected to one outlet have the same program (frequency) set. Also the intensity of magnetic field (in %) is set for both applicators. However, intensity in mT does not have to be, in case of use of two different applicators, identical!

The table below shows the transfer of set intensity of magnetic induction (in %) to mT value for an individual applicator:

Intensity set [%]	Big solenoid [mT]	Small solenoid [mT]	Ring [mT]	Single cover [mT]	Double cover [mT]	Triple cover [mT]
0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.6	0.8	1.2	1.3	1.2	1.2
20	1.2	1.6	2.4	2.6	2.4	2.4
30	1.8	2.4	3.6	3.9	3.6	3.6
40	2.4	3.2	4.8	5.2	4.8	4.8
50	3.0	4.0	6.0	6.5	6.0	6.0
60	3.6	4.8	7.2	7.8	7.2	7.2
70	4.2	5.6	8.4	9.1	8.4	8.4
80	4.8	6.4	9.6	10.4	9.6	9.6
90	5.4	7.2	10.8	11.7	10.8	10.8
100	6.0	8.0	12.0	13.0	12.0	12.0

TO START AND INTERRUPT THERAPY

Start the therapy by pressing the "Start/Pause" push-button (11). The bar-graph (14) is blinking during therapy.

You cannot change parameters during therapy. The therapy ends automatically when the pre-set time has elapsed. Press "Start/Pause" push-button (11) repeatedly to interrupt the therapy at any time. You may change the parameters or applicators during an interruption. Press "Start/Pause" push-button (11) again to continue therapy.

If an applicator is completely covered (e.g. by patient's body), it can become -- particularly during higher intensities -- overheated (above 40°C). This is signaled by yellow control light on top of bar-graph (14). Disconnect the applicator and let it cool down.

TO RESET VALUES OF THE LAST THERAPY

Press the push-button with arrow (13) to set values of the last therapy. To use the push-button, there may not be any therapy going on, and the control light "Channel„ (6) of relevant channel must be on. To switch to another channel, press the push-button (5).

SHORT INSTRUCTIONS FOR USE

1. Connect the instrument to mains.
2. Set the power switch into position 1.
3. Connect applicator(s).
4. Press push-button (5) to select between channels "A" and „B".
5. Press push-button "P/F"(2) to select "Program" or "Frequency" mode.
6. Press buttons (3) to select required program or frequency.
7. Set therapy time by push-buttons (7).
8. Press push-buttons (9) and (7) to set value of variable part of frequency.
9. Set intensity of magnetic field by push-button (10).
10. Start therapy with "Start/Pause" push-button (11).
11. Interrupt therapy at any time by "Start/Pause" push-button (11).
12. Press push-button (13) to reset values of the last therapy.

FUSE REPLACEMENT

Fuses are located on the rear panel in black round cases. Make sure that power switch is set to "0". Unplug the mains cable from the instrument and from the mains plug. Use an appropriate screwdriver to rotate the inner segment of the fuse case anti clockwise to remove and replace the fuse. Do not use fuses other than those stated in the label below the fuse cases. Only qualified personnel should do this procedure.

MAINTENANCE AND TRANSPORT

The unit may be cleaned by wiping over with a damp cloth. Do not use alcohol-based solutions. Clean applicators when disconnected from instrument. Use sponge with a cleaning agent. Disinfect applicators using 10% solution of e.g., Persteril.

Transport the instrument in original packaging. Remove power cable and aplicators. Avoid rough handling.

TROUBLE SHOOTING

This section will try to anticipate potential problems that you may encounter in the day-to-day use of the product. Included is information which should help you solve these problems. If after trying suggested solutions, the product still does not function properly, please contact your service center.

Symptom:	**Solution:**
"Intensity" display (12) shows "--".	Check connection of applicators; connect different applicator.
Red control light "Error A" or "Error B" (15) is on and "Intensity" display (12) does not show "Er".	Connect both applicators to adapter plug; connect different applicator.
Power switch is on, front panel is dark.	Check the power connection to the instrument and to the mains socket; check the voltage in socket; check fuses.
Red control light "Error A" or "Error B" (15) is on, "Intensity" display (12) shows "Er" and "Time / WS" display (8) does not show "05".	Check connection of applicators; connect different applicator.
Red control lights "Error A" or "Error B" (15) are on, "Intensity" display (12) shows "Er" and "Time / WS" display (8) does not show "05".	Switch the instrument off and on again after around 5 sec. If defect remains only at one channel, you can use the second channel as an emergency. No applicator may be connected to the faulty outlet!

TECHNICAL SPECIFICATIONS

Number of independent outputs: 2
Magnetic induction max: depends on the type of applicator and type of current)
Time of therapy max: 5 to 90 min. (depends on the type of applicator and type of current)
Accuracy of time therapy: ± 3 %

Magnetic field frequency: 1 Hz to 60 Hz
Accuracy of generated frequency: ± 3 %

Mains voltage: 198 V to 252 V (complies with EN)
50 Hz ± 10 %
Power input: 350 VA typical
650 VA max

Operating environmental conditions:
temperature: + 15°C to + 40°C
relative humidity: 30 % to 75 %
atmospheric pressure: 700 hPa to 1060 hPa
Storage/transport environmental conditions:
temperature: - 10°C to + 55°C
relative humidity: 5 % to 85 %
atmospheric pressure: 650 hPa to 1100 hPa

Dimensions: 375x110x225 mm
Weight: 8.5 kg approx.
Noise level: 54 dB max (measured in the acoustic tile room 300 m^3 min)
The unit is designed to comply with: IEC 601-1 (1994), IEC 601-1 +A1, A11, A12 (1995), CISPR 14
Equipment Class: Class I
Type B applied part:
BF (symbol) - This parameter is guaranteed only with original BTL applicators)
Protection: IP 20

Mains transformer fuses used:
primary side (external): 2x T6.3A for 230 V / 2x T10A for 115V

ON indication (green colour): LED indicator POWER
In-use indication: A and B channel bar-graphs

Error indication:	ERROR A or ERROR B red indicators
ON/OFF switch marking:	0 / 1
Standard accessories:	2 spare fuses Magnetic applicators (not incl. in price) user manual

Useful addresses

The product is manufactured in accordance with the EU Medical Devices Directive by :

BTL Industries Ltd.
Suite 401 Albany House
324-326 Regents Street
London, W1B 3BL United Kingdom
E-mail: sales@btlnet.com
http://www.btlnet.com

For service, please contact service department at service@btlnet.com.

Warranty

The Manufacturer of this product warrants the product to be free from defects in workmanship and material for a period of twelve months after the date of shipment from the factory. This warranty excludes any disposable items and accessories, including, but not limited to cables or leads, power cords and electrodes. The manufacturer agrees to correct such defects without charge, or at its option to replace the item with a comparable model. To register and be eligible for warranty service, you must send or fax the fully completed warranty registration form within 30 days of installation. All costs of shipment are the responsibility of the purchaser. Damage to any part such as by accident or misuse or improper installation or by use of any accessories or abrasive material not produced by the Manufacturer is not covered by this warranty. Because of varying climatic conditions, this warranty does not cover any changes in finish, including rusting, pitting, corrosion, tarnishing or peeling. Servicing performed by unauthorized persons render this warranty invalid. There is no other express warranty. The Manufacturer hereby disclaims any and all warranties, including but not limited to, those of merchantability and fitness for a particular purpose to the extent permitted by law. The duration of any implied warranty which cannot be disclaimed is limited to the time period as specified in the express warranty. The Manufacturer shall not be liable for incidental, consequential, or special damages arising out of, or in connection with product use or performance except as may be otherwise accorded by law.

This warranty may differ from the warranty terms and conditions provided by your supplier and by applicable laws in your country.

II. APPLICATORS

INSTRUCTIONS FOR USE

- Connect / disconnect applicators only when the unit is switched off.
- Avoid direct contact between patient and applicator.
- Do not strain mechanically movable inlet cable and connector.
- Protect applicator's surface against mechanical damage.
- Always check applicator, movable cable and connector before use. Do not use applicator in case of any damage to prevent injury with electrical current.
- If adapter plug is not used, "Intensity" (12) display shows the highest value of magnetic induction intensity (mT).
- If adapter plug is used, "Intensity" (12) display shows the intensity of magnetic induction in %.
- Pulse magnetic field can cause disturbances, and in extreme case damage, to electronic instruments exposed to it.
- Check applicator's temperature after termination of therapy. If the temperature is around 40°C or more, let the applicator cool down before another use.
- Have the applicator checked every 6 months by a qualified service person.

TECHNICAL DATA

Field outside application area

The cylinder coils, i.e. both solenoids and ring, do not have their corresponding levels of magnetic induction stated outside the coils due to the fact that nearly all intensity of magnetic field is concentrated into the inner area of coil. A significant value of magnetic induction outside coil can be also found very close to the coil´s surface.

Since flat coils´ magnetic field is symmetrical according the middle plane of coil, the diagrams of magnetic induction levels show just one half of it. The other half is symmetrical. Generally speaking, value of magnetic induction drops with the square of distance from coil. When it is clear from a diagram that the value of 2 mT is in the l10 cm distance, then in the distance of 100 cm the magnetic induction is $(10/100)^2$ = 0.02 mT. This value has, due to short application period, neglecting biological effects.

Used material

Upholstering material used for applicators is high quality inflammable artificial leather. All material used is harmless to human health.

BIG SOLENOID (1)

Dimensions:	500x330 mm diam.
Weight:	6.1 kg
Inductance:	48 mH
Resistance:	7.8 Ω
Max. voltage:	80 V
Max. current:	8 A
Max. power:	100 VA
Max. temperature:	45 C
Insulation:	class II
Environment:	standard

The applicator is constructed as cylindrical coil. Chassis and cover are made of hard polystyrene that forms additional insulation. Internal part of applicator is upholstered. Movable outlet is provided by rubber outlet.
Fig. 1 shows levels of magnetic induction, valid for all intensity values. The numbers relate to maximum actuation of applicator. The higher values relate to use without adapter plug, the lower values relate to use with adapter plug.
Electrical current induced in tissues is in direct relation to speed of change of magnetic induction shown at fig. 2.

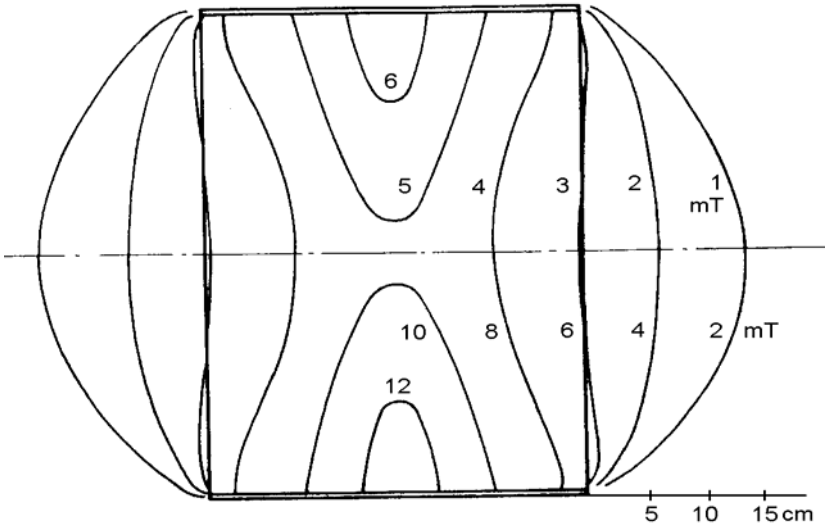


Fig. 1: Big solenoid

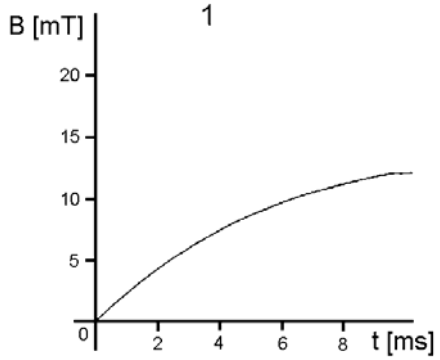


Fig. 2: Big solenoid

SMALL SOLENOID (2)

Dimensions:	300x330 mm diam.
Weight:	5.2 kg
Inductance:	23 mH
Resistance:	5.3 Ω
Max. voltage:	80 V
Max. current:	8 A
Max. power:	85 VA
Max. temperature:	45 C
Insulation:	class II
Environment:	standard

The applicator is constructed as cylindrical coil. Chassis and cover are made of hard polystyrene that forms additional insulation. Internal part of applicator is upholstered. Movable outlet is provided by rubber outlet.
Fig. 1 shows levels of magnetic induction, valid for all intensity values. The numbers relate to maximum actuation of applicator. The higher values relate to use without adapter plug, the lower values relate to use with adapter plug.
Electrical current induced in tissues is in direct relation to speed of change of magnetic induction shown at fig. 2.

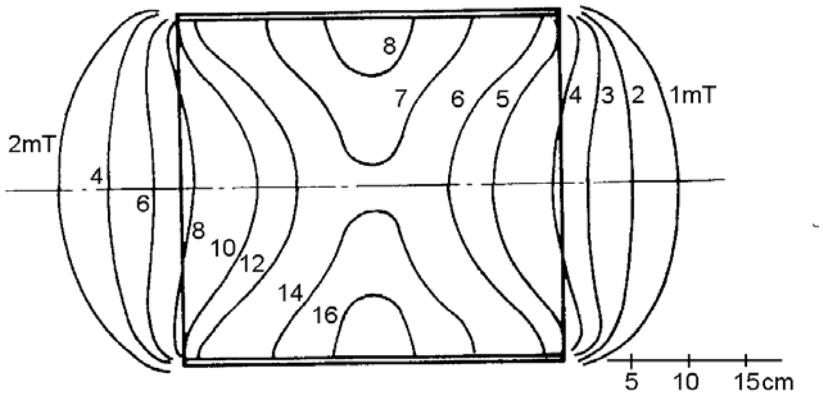


Fig. 1: Small solenoid

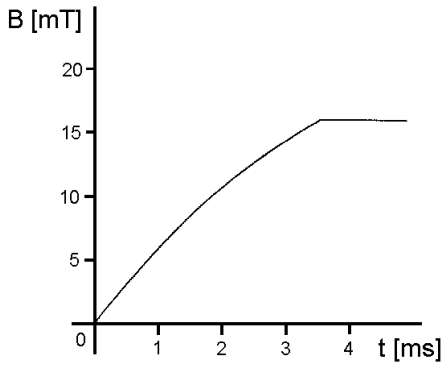


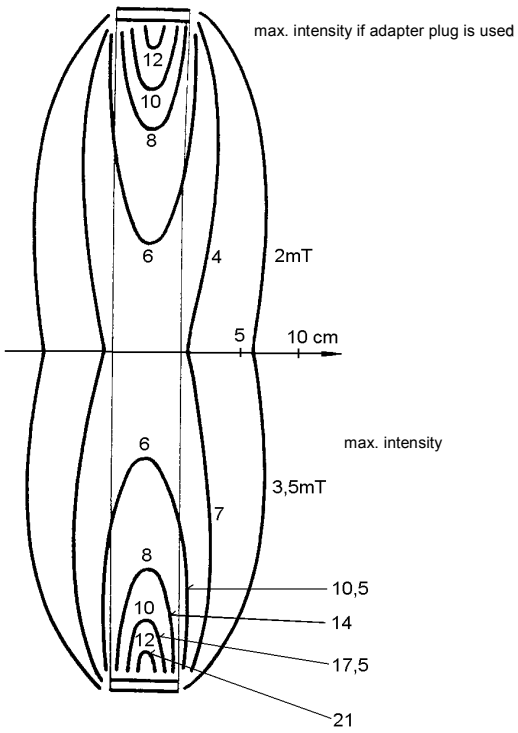
Fig. 2: Small solenoid

RING (3)

Dimensions:	300x60 mm diam.
Weight:	2.7 kg
Inductance:	36 mH
Resistance:	4.2 Ω
Max. voltage:	80 V
Max. current:	7 A
Max. power:	33 VA
Max. temperature:	45 C
Insulation:	class II
Environment:	standard

The applicator is constructed as self-supporting coil with double insulation.
Fig. 1 shows setting of levels of magnetic induction, valid for all intensity values. The numbers relate to maximum actuation of applicator. The higher values relate to use without adapter plug, the lower values relate to use with adapter plug.
Electrical current induced in tissues is in direct relation to speed of change of magnetic induction shown at fig. 2.

Fig. 1: Ring



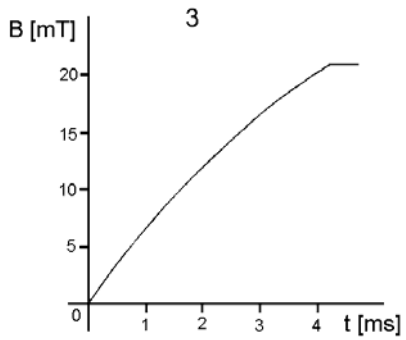


Fig. 2: Ring

DISC (4)

Dimensions:	240x240 mm
Weight:	2.1 kg
Inductance:	29 mH
Resistance:	3.2 Ω
Max. voltage:	80 V
Max. current:	6 A
Max. power:	22 VA
Max. temperature:	45 C
Insulation:	class II
Environment:	standard

The applicator is constructed as self-supporting flat coil built-in to both-side upholstered pillow.
Fig. 1 shows setting of levels of magnetic induction, valid for all intensity values. The numbers relate to maximum actuation of applicator. The higher values relate to use without adapter plug, the lower values relate to use with adapter plug.
Electrical current induced in tissues is in direct relation to speed of change of magnetic induction shown at fig. 2.

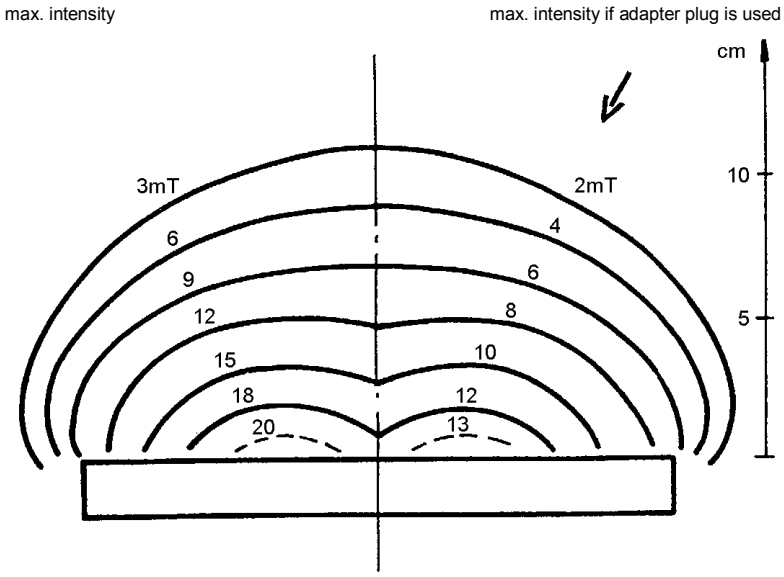


Fig. 1: Disc

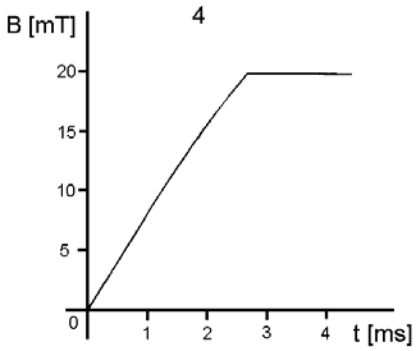


Fig. 2: Disc

DOUBLE COVER (5)

Dimensions:	240x170x20 mm
Weight:	3.7 kg
Inductance:	33 mH
Resistance:	4.6 Ω
Max. voltage:	80 V
Max. current:	6 A
Max. power:	30 VA
Max. temperature:	45 C
Insulation:	class II
Environment:	standard

The applicator consists of two mats (covers). The connection is provided by belt of 170mm length. Pillows consist of elliptical self-supporting coils insulated and upholstered from both sides.
Fig. 1 shows magnetic induction levels valid for all intensity values. The numeric values relate to the maximum actuation of applicator. The higher values relate to use without adapter plug, the lower values relate to use with adapter plug. Fig. 1a shows double cover with its two pillows spread out, fig. 1b shows the position of one cover at 50 mm distance from the other, and fig. 1c shows double cover with pillows at distance given by the length of the connecting belt.
Electrical current induced in tissues is in direct relation to the speed of change of magnetic induction shown at fig. 2.

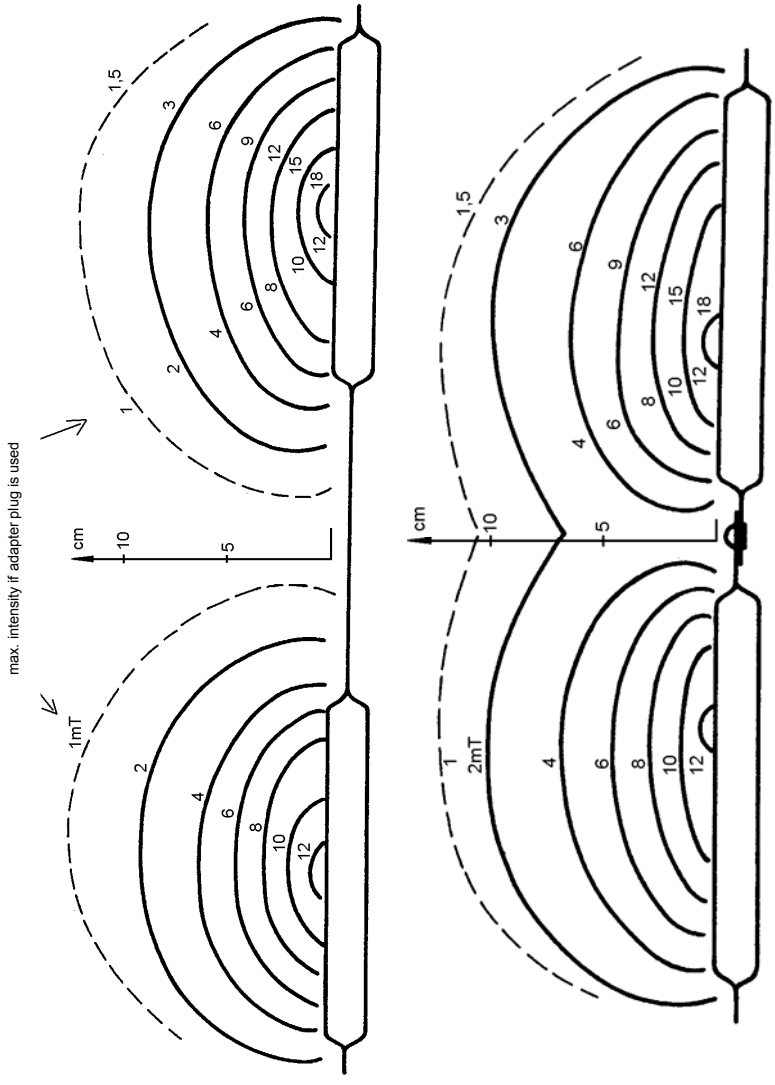


Fig. 1a and Fig. 1b: Double cover

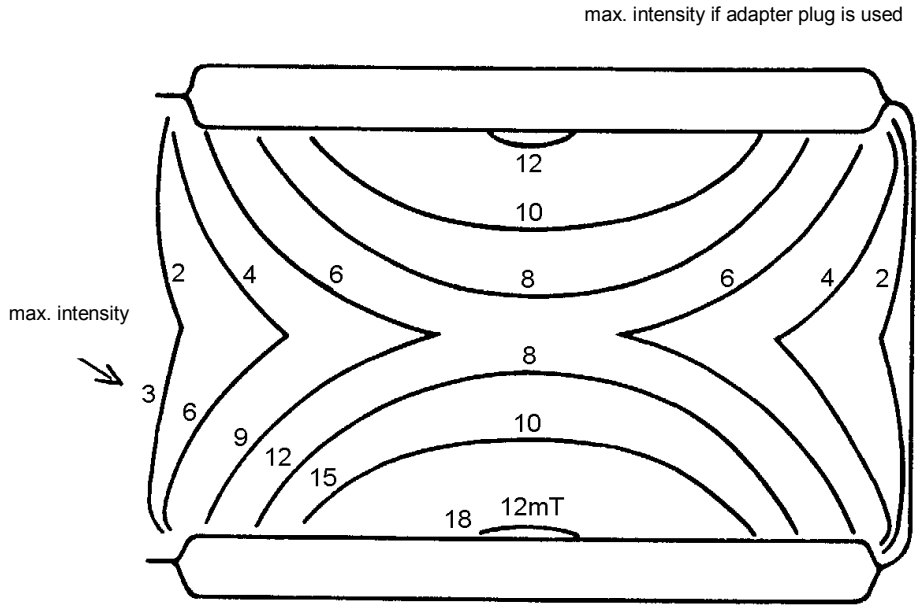


Fig. 1c: Double cover

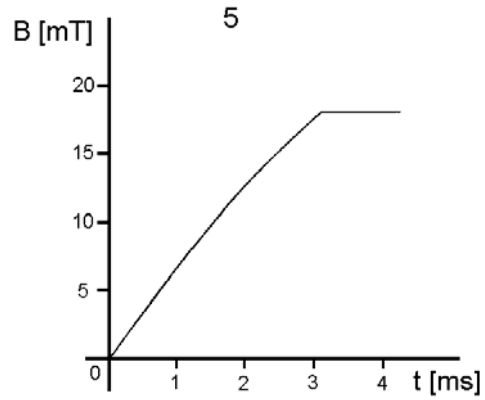


Fig. 2: Double cover

TRIPLE COVER (6)

Dimensions:	590x280x20 mm
Weight:	5.5 kg
Inductance:	51 mH
Resistance:	6.6 Ω
Max. voltage:	80 V
Max. current:	6 A
Max. power:	45 VA
Max. temperature:	45 C
Insulation:	class II
Environment:	standard

Three independent elliptical coils with additional insulation from both sides are built-in to an upholstered, from both sides insulated, mat. This insulation makes, together with internal parts, relatively rigid structure, which is still partially flexible.
The coils are poled alternatively. Fig. 1 shows setting of magnetic induction levels valid for all intensity values. The numeric values are relevant to the maximum actuation of the applicator. The higher values are valid for use without adapter plug, the lower values are valid for use with adapter plug.
Electrical current induced in tissues is in direct relation to speed of change of magnetic induction shown at fig. 2.

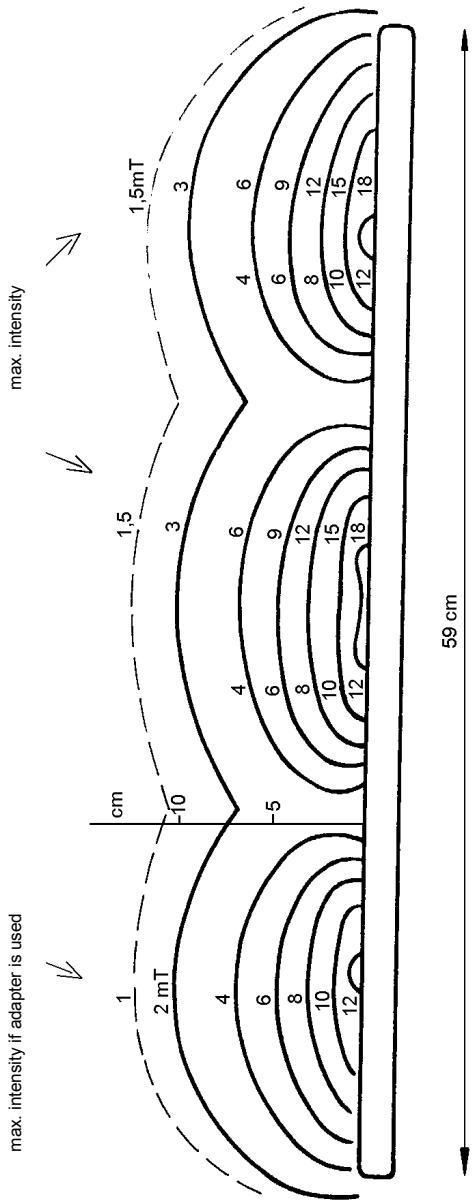


Fig. 1: Triple cover

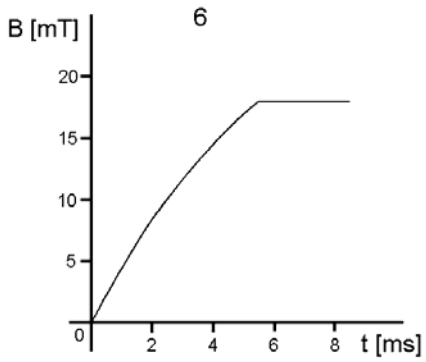


Fig. 2: Triple cover

III. USER'S GUIDE

Introduction

This guide provides instructions on therapeutical use of low frequency pulse magnetic field instrument BTL-09. The manual also gives general guidelines on use of pulse magnetic field therapy in medical practice.

This guide does not provide the reader with legal qualification to diagnose patients or to use a pulse magnetic field instrument.

BTL-09 was developed as the result of Company's own experience as well as international research on the effects of a pulse magnetic field on the human organism.

As in all therapy, the use of pulse magnetotherapy is not a cure-all, and does have a certain failure percentage. However, when intensive rehabilitation is applied, positive results can be expected. This type of therapy has provided effective, long-term positive effects where other treatment methods had failed.

The effect of a pulse magnetic field on a living organism

Controversy and disagreement still exist regarding the use of pulse magnetic fields in clinical medicine. However, much information has been gathered in research that proves the positive effects of a pulse magnetic field on the body. Pulse magnetic field therapy, often used in combination with other treatment methods, has produced surprising and effective positive results for a wide variety of diseases. It has been proven that a number of medicines have had unexpected benefits when combined with pulse magnetic field therapy.

Pulse magnetic fields directly affect physiological processes at the molecular and atomic level. The changes in biotropic parameters through the use of magnetic fields indicate that a significant pharmacological effect occurs at the molecular level. When applying a pulse magnetic field to living tissue, as described in physics by Maxwell, both intercellular space and cellular membranes are affected. A pulse magnetic field creates, at cellular level, an induced electric alternate field corresponding to the field generated by the instrument. Biological tissues are not homogenous, but contain dipoles, ions, and electricity conductive channels. These components are influenced by artificially induced fields, and cause the activation of a number of defensive reactions, such as the immunity system or changes in fagocytosis, etc. Electromagnetic waving means the spreading of a variable magnetic field through space and it carries energy. The irradiated tissue undergoes a number of physical processes such as polarization, iontophoresis and electromagnetic induction.

According to the latest research, the intercellular space is one of the most important components. It is there that soliton waves are spread, which irritate receptors on the surface of the cellular membranes. These impulses are amplified by the membrane and transmitted into the core of the cell, where they affect metabolic processes. This mechanism causes initiation of the transport of ion mechanisms through the cellular membrane. Loosening of matter similar to histamine from the tissue under the influence of a pulse magnetic field causes vasodilation and a later neovascularisation. This leads to tissue breathing improvements, and provides essential energy to the cell.

Main effects of a pulse magnetic field on living tissue

A pulse magnetic field is widely used as an analgesic for pain, and as an anti-inflammatory and hypermising (widening vessels) agent. Under the influence of a pulse magnetic field, the blood supply into the tissue changes, as well as the speed of nerve stimulus. This leads to significant changes in the muscle tonus (a normal state of continuous slight tension in muscle tissue that facilitates its response to stimulation). With hypertonia, tonus decreases and vice versa, which leads to normotonia. In addition, blood structure shows change in the sense of erytropoesis stimulation. The pH of the tissue changes with a resultant calcium precipitation that is used not only in osteology, but also as a muscle and nerve response to stimulation.

The biggest effects are proven to be pain relief, and anti-inflammatory effects -- not only with bacteria inflammations, but also with immuno-allergic diseases.

In a process that is not fully understood or appreciated nowadays, localized pulse magnetic field application appears to precipitate a response from other systems within the organism, beginning with the nerve and hormonal systems. It is presumed that body systems participate in this reaction in the following order: 1. Nerve 2. Hormonal 3. Heart 4. Vessel 5. Digestion 6. Muscle 7. Immunology 8. Bone.

The main medical fields indicated for magnetotherapy

Rehabilitation

- degenerative joint diseases (arthritis)
- periathritis humeroscapularis
- CC and CB syndrome

- epicondylitis
- myopathy
- post-injury joint and muscle pain
- edema following injury
- post-sport injuries
- LS and LIS syndrome
- spondylosis and spondylartis
- paresis of peripheral nerves
- post DMO and polio conditions
- PCHP, also juvenile
- ischemic changes in upper and lower limbs

Orthopedics

- see rehabilitation
- algodystrophic syndrome
- prolonged healing of fractures
- ostomyelitis acuta as well as chronica
- pseudo-arthritis of long bones
- improves functioning of GIT after surgery
- osteoporosis
- dissecting osteochondrosis
- morbus Perthes

Neurology

- see rehabilitation
- hypotonic and hypertonic muscle condition
- medium spinal amyotrophy (for children up to 2-3 years)
- myopathy

Dermatology

- all situations where an increase of blood supply to tissue is required (ulcus crusis, decubits etc.)
- psoriasis vulgaris
- itchy dermatitis

Further positive effects of a pulse magnetic field

- improves information transfer of nerve stimulation
- muscle ability to contract
- blood circulation (erythropoiesis stimulation)
- improves tissue pH
- improves the immunity system through hypophysis stimulation
- improves the psychological status of the patient
- enhances effects of antibiotics
- increases resistance to viral diseases (Following a pulse magnetic field effect, there is a lower occurrence of viral diseases. If they occur, the progress is less severe.)
- anti-inflammatory effect with both infected and non-infected inflammations
- positively affects status asthma and spastic bronchitis (by improving ventilation parameters)
- blocks the influence of parathormom on the receptor within the cellular membrane of the osteoblast. The result is the reduction of osteoblastic activity, which leads to decreased bone re-absorption and reduced collagenous activity, beta-glucorondiacis and acid phosphates
- increases collagen
- improves orientation of bone lintel

With a wide range of diseases, pulse magnetotherapy has proven successful where other methods have failed, and with a long-term effect.

Applicators

Aplicators for BTL-09 are manufactured from top-quality materials that provide a superior surface finish for easy and non-demanding maintenance. The patient does not have to disrobe for therapy. In addition, neither bandages nor plaster weakens the magnetic field.
Applicators are manufactured in three general types:

1. Universal (mats, round, square, etc.)
2. Solenoids (cylinders of various width - 50 and 30 cm in diameter)
3. Desk (solid, inflexible applicators up to 3 cm in width)

Magnetic field

BTL-09 generates rectangular pulses. For easy use, the most frequently used therapies are pre-programmed in BTL-09. Experience has proved that a slow frequency of 3.5 to 7.0 Hz is best for inflammatory states and acute painful states, with the frequency of 14 to 28 Hz for chronic states. 14 Hz is most suitable for application to the head, the spine, or the whole body for neurological ventricular diseases.

If you use the pulse magnetic field for acute or chronic pain, there may be a temporary worsening of the pain. This is often caused by over supplying the tissue with blood in combination with an activation of the inflammation. This is also an indicator of the patient's reaction to the pulse magnetic field, which is a positive sign. The application length is usually around 30 minutes a day, and should not be interrupted even if a temporary worsening of pain occurs. In such a case, you can lower the pulse magnetic field's intensity by 50% for the following 3-4 days, and then return to the original level of intensity.
When the first signs of pain lessening appear (the back or joints), continue to apply the pulse magnetic field for another 3-4 days, and then end the treatment. Usual therapy period is 2 to 3 weeks. For neurological diseases, a long term (even for several months) interrupted application should be expected.

Contraindications

- absolute contraindication during pregnancy (either patient or therapist)
- acute fevers, general tiredness, active TBC
- all bleeding states
- fungi diseases
- patients with a pacemaker

Combination with other physical methods

Pulse magnetotherapy can be combined with all other physical methods (ultrasound, laser, iontophoresis, diadynamic current). It is also very suitable to combine with an intensive rehabilitation, water treatment, acupuncture, physiotherapy, etc.

The combined use of antibiotics and the pulse magnetic field has proved very efficient, for it leads to amplification of the antibiotics that had previously been ineffective. This effect seems to be especially strong with bone inflammations. The application of the pulse magnetic field and corticoids is also very efficient. For example an application of Kenalog with mesocain into the joint or soft tissues displays a healing effect for 3-4 weeks, but when combined with a pulse magnetic field the effect is extended for a period of a number of months and even up to one year. When using Diprophos rather than Kenalog, the resultant beneficial effect is much longer.

Methodology

BTL-09 offers a wide range of possibilities for the choice of an optimal therapeutic procedure, whether it be the wide selection of pre-programmed settings or the ability to directly set the pulse magnetic field frequency. The flexibility of BTL-09 is very much appreciated by pulse magnetotherapy specialists.

For simple and safe everyday operation, programs have been pre-selected -- based on long-term experience -- that have the best effects in most cases. Each generated pulse magnetic field has its specific bio-trophic parameters that evoke a specific reaction in a living organism. Any change in these parameters can result in an unexpected negative effect. This includes primarily the affecting of skeletal conditions. For example, instead of an expected muscle creation in a badly self-healing fracture, inappropriate methodology can cause the dissolving of calcium ions into soft tissue. This can sometimes form large deposits of soft tissues in the area of joints, and worsen the overall condition. On the other hand a clinically monitored 2.5-year experiment has proved that there are a few people who have absolutely no reaction to any magnetic field, even with a high intensity.

Experience shows that a temporary worsening during the 3^{rd}-5^{th} day after beginning treatment does not mean that therapy should be interrupted. On the contrary, it is a good sign that the patient is positively reacting to the pulse magnetic field. This is because the irradiated tissue is, due to vasodilatation, oversupplied with blood and as a result, subjective conditions become temporarily worse. It is also necessary to explain to the patient that when therapy is

completed -- following 2 to 3 weeks of a **daily dose of 30 minutes** that is not to be shortened -- all complications will not necessarily disappear immediately. Instead, symptoms may fade away gradually after therapy has been completed. After the healing process has been triggered by a completed pulse magnetic field therapy, the organism uses the post-therapy period for reparation and regeneration.

IV. BASIC INDICATORS AND COMMENTS ON THERAPY

List of giagnoses

1. Alloplastica
2. Alopecie
3. Arthritis rheumatica
4. Arthrodesis
5. Arthrosis
6. Arthrosis chronica
7. Atherosclerosis
8. Coxalgia
9. Coxarthrosis
10. Decubitus
11. Degeneratio spinalis
12. Dermatitis atopica
13. Dermatosis pruritus
14. Distensio
15. Distorsio
16. Eczema atopicum
17. Enuresis
18. Epicondylitis
19. Fractura
20. Fractura
21. Gonalgia
22. Gonarthrosis
23. Ischaemia
24. Metatarsalgia
25. Migraena
26. Morbus Perthes
27. Myalgia
28. Myopathia
29. Neurodermatitis
30. Osteochondrosis
31. Osteomyelitis acuta, chronica
32. Osteonecrosis aseptica
33. Osteoplastica
34. Osteoporosis
35. Osteosynthesis
36. Ostitis
37. Paralysis nervi
38. Periartritis humeroscapularis (Frozen shoulder)
39. Poliomyelitis anterior
40. Polyarthritis iuvenis
41. Pseudoarthrosis
42. Psoriasis
43. Sanatio posttraumatica
44. Sclerosis cerebrospinalis multiplex
45. Spasmus
46. Spondylarthrosis ancylopoetica (Morbus Bechterevi)
47. Sy. algodystrophicus (Sy. Sudeck)
48. Sy. canali carpi
49. Sy. cervicobrachialis
50. Sy. cervicocranialis
51. Sy. lumbosacralis
52. Sy. vertebralis
53. Sy. vertebralis
54. Tendopathia
55. Trigeminus facialis
56. Ulcus cruris

STOMATOLOGY

57. Appicitidis
58. Dolor postextractionem
59. Parodontosis
60. Periostitis

1. Alloplastica

Program: 29.
Duration: 60 minutes a day for a period of 2-3 months, possibly repeatedly, larger doses.
Application: max. 4mT for UL and LL small solenoid, max. 7mT for other applicators.
Comment: Patient is relieved of pain, X-ray changes of the skeleton are apparent later. At the same time it is recommended to give Ca, F, anabolics, and vitamin D to support bone metabolism.

2. Alopecie

Program: 25 or 42.
Duration: 30 minutes twice a day or 45 minutes once a day for 5 weeks.
Application: small solenoid,
program 25: max. 13mT for 15 minutes or max. 6mT for 45 minutes,
program 42: max. 13mT for 30 minutes or max. 8mT for 45 minutes.
Comment: Vasodilatation, local derivation ointment. Laser therapy is also suitable. Therapeutic effect after 5-6 weeks.

3. Arthritis rheumatica

Program: 4 (or possibly 17).
Duration: 30 minutes, long-term.
Application: program 4: max. 14mT for applicators other than solenoids, max. 8mT for solenoid,
program 17: max. 20mT for applicators other than solenoids, max. 13mT for solenoid.
Comment:
1. If there is a clinical finding, but no morphological change has yet occurred, apply magnetotherapy to the entire body in combination with non-steroid, anti-rheumatoid medicaments such as Voltaren or Diclofenac. The patient lies in two solenoids, including arms.
2. If deformational changes to the joints have already occurred, the patient must be informed that these morphological changes cannot be changed with therapy, but the process of degeneration will be stopped and the level of pain will decrease.

4. Arthrodesis

Program: 29.
Duration: 40 - 60 minutes a day for a period of 2-3 months, possibly repeatedly, larger doses.
Application: max. 10mT for 15 minutes, for UL and LL small solenoid
Comment: Patient is relieved of pain, X-ray changes of the skeleton are apparent later. At the same time it is recommended to give Ca, F, anabolics, and vitamin D to support bone metabolism.

5. Arthrosis

Program: 9 (a so-called rescue program) and 15 (as a supplementary program).
Duration: 14-21 treatments, 30 minutes a day.
Application: 8mT for program 9, 13mT for program 15. Apply to the affected joint or use two applicators opposite each other to form a homogenous field.

6. Arthrosis chronica

(without an X-ray finding)

Program: 8 or 15.
Duration: 30 minutes.
Application: 8mT for program 8, 12mT for program 15, applicator according to localization; big solenoid for hip joints.

7. Atherosclerosis

(vein diseases, including diabetic angiopathy)

Program: 19.
Duration: Daily, 10-50 therapy sessions of 10-30 minutes long.
Application: 3-10mT, small solenoid. Place applicator on localized area.

8. Coxalgia

(without an X-ray finding)

Program: 15 or 9.
Duration: 30-45 minutes a day, 14-21 treatments.
Application: 11mT, applicator to the affected joint or two applicators opposite each other to create homogenous field.

9. Coxarthrosis

Program: 9 (the „rescue“ program).
Duration: 14-21 treatments, 30 minutes a day.
Application: 12mT, applicator to the affected joint or two applicators opposite each other to create an homogenous field.

Program: 19.
Duration: 30 minutes.
Application: 10mT for each applicator other than solenoid, 8mT for solenoid, ring, or disc.
Comment: With infliction on both sides, use double cover, 2 discs or big solenoid.

10. Decubitus

Program: 15.
Duration: 30-45 minutes a day.
Application: max. 9mT for 45 minutes or max. 11mT for 40 minutes. Apply according to a location, mostly big solenoid – max. 13mT for 20 minutes.

11. Degeneratio spinalis

Program: 14 or 15.
Duration: 35 - 45 minutes a day.
Application: 9-10mT, 6-8 weeks.
Comment: Therapy depends on the neurological findings (spastic LL, hypotonia, a wide based walk, phantom pain). These diseases are quite problematic and therapy is long-term.

12. Dermatitis atopica

Program: 14.
Duration: 30-45 minutes, 5-6 weeks.
Application: 9-10mT, disc or double cover.

13. Dermatosis pruritus

Program: 14.
Duration: 30-45 minutes twice a week.
Application: max. 8mT for 45 minutes or max. 9mT for 40 minutes for applicators other than solenoids. Apply according to a location, mostly small solenoid - max. 5mT for 45 minutes or max. 9mT for 25 minutes

14. Distensio

Program: 17 or 39.
Duration: 14-21 therapy sessions of 30 minutes per session.
Application: 15mT for applicators other than solenoid. Use 9mT for solenoids.
Comment: After making an application to the affected area, a temporary worsening of the condition can be expected.

15. Distorsio

Program: 17.
Duration: 30 minutes.
Application: 12mT for each applicator other than solenoids; 8mT for solenoids. Apply to affected area.
Comment: First, apply ice immediately follow by program 8 or 44. With this treatment, edema often will not occur. If it is a knee joint with obvious exudate but a blood haemorrhage is not suspected, drain under sterile condition, and continue with a tightly wrapped icy application. Following a pulse magnetic field application, exudation around the injured area can be expected to occur again as a result of tissue vasodilatation.

16. Eczema atopicum

Program: 14.
Duration: 30-45 minutes, 5-6 weeks.
Application: max. 8mT for 45 minutes or max. 10mT for 35 minutes , disc or double cover.

17. Enuresis

Program: 14.
Duration: 10-15 therapy sessions of 2x15 minutes each.
Application: Use disc applicator below the symphysis. Best results are achieved with hypertonic bladders.

18. Epicondylitis

Program: 15 or 29.
Duration: 10-15 therapy sessions 30 minutes a day.
Application: 12mT for applicators other than solenoid. 6-8mT for solenoids. Apply to the affected C area of the spine, shoulder or elbow.

19. Fractura

(fractures in casts or with an osteotomy)

Program: 15 or 19.
Duration: 30, max. 40 minutes per day. Therapy can be repeated.
Application: max. 11mT – program 15, max. 7mT – program 19, for UL and LL small solenoid.
Comment: It is always necessary to remove sequesters and evacuate hollows with pus content. Plaster or metal implants do not affect therapy.

20. Fractura

(prolonged healing of bones)

Program: 17.
Duration: 2-3 times a day at 30 minutes per therapy session.
Application: max. 12mT for 35 minutes. Place applicator according to the localization. For LL and UL, use small solenoid.

21. Gonalgia

(without an X-ray finding)

Program: 15.
Duration: 30 minutes.
Application: 12mT for applicators other than solenoid. 8mT for solenoids.

22. Gonarthrosis

Program: 9 (the „rescue“ program) or 15.
Duration: 14-21 therapy sessions of 30 minutes per session.
Application: 12mT. Apply to the affected area. Two applicators can be used opposite each other to form a homogenous field.

23. Ischaemia

Program: 15.
Duration: For LL, it is best to apply 1-2 therapy sessions of 30-45 minutes per day until claudication decreases.
Application: 5mT. Use two applicators -- one to the thigh and the other to the shin, or a solenoid. At the same time, it is possible to supply a vasodilatacia (Agapurin etc.). The effect of a medicament is enhanced with the use of a pulse magnetic field. It is also suitable to apply bubble bath for LL.

24. Metatarsalgia

Program: 14.
Duration: 30 minutes a day.
Application: 7mT, with small solenoid. Use big solenoid if both hands are affected.

25. Migraena

(if EEG is not pathological)

Program: 29.
Duration: 15 therapy sessions of 30 minutes per session.
Application: Intensity at 60-80% - adapter plug is used.

26. Morbus Perthes

Program: 9.
Duration: 6-8 weeks, 30 minutes per session.
Application: max. 8mT for 30 minutes. Apply big solenoid or double cover.
Comment: Treatment duration can be shortened for aseptic necrosis of the femoral head if the disease is diagnosed early.

27. Myalgia

Program: 15 or 24.
Duration: 7-10 times for 30 minutes per session.
Application: 12mT. Apply applicator according to a location of pain.

28. Myopathia

Program: 39.
Duration: For pediatrics, 1-2 therapy sessions per day for 30 minutes per session. Length of therapeutic treatment can be up to 5 weeks. After an interval of 1 month, therapy can be resumed. This pattern can be repeated several times a year.
Application: 9-12 mT for applicators other than solenoids, 4-6 mT for solenoids. Place the applicator mainly in the spinal area, using a solenoid, or double cover for feeble patients.

29. Neurodermatitis

Program: 14.
Duration: 30-45 minutes, 5-6 weeks.
Application: max. 10mT for 35 minutes , disc or double cover.

30. Osteochondrosis

Program: 29.
Duration: 30-60 minutes a day for chondropathia for a period of several weeks up to 3 months, until X-rays indicate reparation.
Application: max. 15mT for 30 minutes for an area applicator or max. 8mT for 35 minutes for solenoid. Place on affected area, usually the knee joint. Bed patients can be treated up to 90 minutes a day.

31. Osteomyelitis acuta, chronica

Program: 8.
Duration: Lengthy, up to several hours a day. For example, 3 times a day for max. 90 minutes per session.
Application: 3-5mT.
Comment: It is always necessary to remove sequesters and evacuate hollows with pus content. Plaster or metal implants have no effect on the therapy.

32. Osteonecrosis aseptica

Program: 39.
Duration: 20 – 40 minutes, long-term therapy, usually for a number of weeks.
Application: max. 12mT for 35 minutes for applicator disc, max. 12mT for 15 minutes for small solenoid, apply according to a location, mostly small solenoid.

33. Osteoplastica

(implantation of a bone graft - for speeding up the healing)

Program: 29.
Duration: 20 - 60 minutes a day for a period of 2-3 months, possibly repeatedly, larger doses.
Application: max. 18mT for 20 minutes for disc, max. 13mT for 10 minutes for small solenoid, for UL and LL small solenoid.
Comment: Patient is relieved of pain, X-ray changes of the skeleton are apparent later. At the same time it is recommended to give Ca, F, anabolics, and vitamin D to support bone metabolism.

34. Osteoporosis

Program: 65.
Duration: 20-60 minutes per therapy for 4 – 5 weeks.
Application: max. 12mT for 20 minutes or max. 4mT for 90 minutes
Comment: Although pulse magnetotherapy can alleviate suffering, recalcification is rare, even when combined with Ca, F, vitamin D or Miacalcic therapy.

35. Osteosynthesis

(for speeding up the healing)

Program: 29.
Duration: 60-120 minutes a day for a period of 2-3 months, possibly repeatedly, larger doses.
Application: max. 17mT for 20 minutes, max. 13mT for 15 minutes for small solenoid, for UL and LL small solenoid.
Comment: Patient is relieved of pain, X-ray changes of the skeleton are apparent later. At the same time it is recommended to give Ca, F, anabolics, and vitamin D to support bone metabolism.

36. Ostitis

Program: 8.
Duration: Lengthy, up to several hours a day. For example, 3 times a day max. for 90 minutes per session.
Application: 3-5mT.
Comment: It is always necessary to remove sequesters and evacuate hollows with a pus content. Plaster or metal implants have no effect on the therapy.

37. Paralysis nervi

(peripheral nerve paresis)

Program: 14.
Duration: 30 minutes per therapy session.
Application: 12mT for applicators other than solenoids. Use 6mT for solenoids. Place applicator according to the localization.
Comment: At the same time, it is necessary to supplement therapy with physical rehabilitation procedures. A joint application of vitamin B12 1000 gamma and B1 i.m. at least three times a week has proved to be effective.

38. Periartritis humeroscapularis (Frozen shoulder)

Program: 15 or 29.
Duration: Daily, for 14-21 therapy sessions for 30 minutes per session.
Application: 12mT for applicators other than solenoids. Use 6mT for solenoids. Place applicator on the affected area.

39. Poliomyelitis anterior

Program: 31.
Duration: 1-2 times a day for 30 minutes for up to 5 weeks, with a time lapse of 1 or 2 months between new treatments.
Application: 6-12mT for an applicator other than solenoid. Use 3-6mT for solenoid. Place the applicator under the head and the body. Begin the therapy with the low intensity and increase after each month.

40. Polyarthritis iuvenis

Program: 4 or 17.
Duration: 30 minutes per day.
Application: 4-6mT. Use big solenoid for the entire body. For affected joints, use small solenoid or double cover.
Comment: Double cover permits the use of a higher intensity - 8-10mT.

41. Pseudoarthrosis

Program: 17.
Duration: Lengthy, up to several hours per day. For example, 3 therapy sessions per day max. for 90 minutes per session.
Application: 3-5mT. Alternate both programs.
Comment: It is always necessary to remove sequesters and evacuate hollows with a pus content. A plaster or metal implants do not affect therapy.

42. Psoriasis

Program: 14.
Duration: 30-40 minutes, 5-6 weeks.

Application: max. 10mT for 35 minutes or max. 9mT for 40 minutes, disc or double cover.

43. Sanatio posttraumatica

Healing of soft tissues

Program: 17 or 39.
Duration: 14-21 therapy sessions of 30 minutes per session.
Application: 15mT for applicators other than solenoid. Use 9mT for solenoids.
Comment: After making an application to the affected area, a temporary worsening of the condition can be expected.

44. Sclerosis cerebrospinalis multiplex

Program: 8.
Duration: max. 40 minutes for disc, max. 90 minutes for double cover or triple cover, max. 10 minutes for big solenoid
Application: 9mT. Place applicator on affected areas.
Comment: There is no cure for multiple sclerosis, but patients are always grateful for even minor improvements. Remember that this disease always affects the brain. Place a triple cover under the head. This therapy usually improves mood and imparts a sense of well-being. However, expect a temporary worsening after 2 or 3 applications. Do not change the program or cease treatment, but intensity can be lowered 50% and returned to 100% after a few days.

45. Spasmus

(back muscle spasmus)

Program: 15 or 24.
Duration: 14-21 daily therapy sessions for 30 minutes per session.
Application: 12mT. Use triple cover paravertebrally along the entire backbone.

46. Spondylarthrosis ancylopoetica (Morbus Bechterevi)

Program: 17 or 30.
Duration: 30 minutes per day for 10 to 14 weeks, depending on pain relief.
Application: 5-12mT, triple cover under lying patient's back.

47. Sy. algodystrophicus (Sy. Sudeck)

Program: 5 or 15.
Duration: 30 minutes.
Application: program 5: max. 14mT for 30 minutes for triple cover,
max. 11mT for 10 minutes or max. 8mT for 30 minutes for small solenoid,
max. 9mT for 25 minutes or max. 8mT for 30 minutes for big solenoid,
program 15: max. 20mT for 30 minutes for triple cover,
max. 13mT for 30 minutes for small and big solenoid.
Comment: 1 pill of Maxi Kalz or Fluocalcid efrv., vitamin D, Superanabolon -- once a week, Miocalcic spray is also possible.

48. Sy. canali carpi

Program: 7.
Duration: 25 - 30 minutes per session.
Application: max. 13mT for 25 minutes or max. 12 mT for 30 minutes. Place applicator to the affected area (usually a disc).
Comment: It is also necessary for the patient to have physical therapy rehabilitation procedures. The effects of corticoids is enhanced by use of the pulse magnetic field.

49. Sy. cervicobrachialis

Program: 15 or 29.
Duration: 14-21 times, 30 minutes a day.
Application: 15mT. Apply to the C part of the spine and both shoulders.
Comment: In all cases, it is necessary to see an X-ray. It is suitable to give myo-relaxants, gentle manual massage of the spinal C muscles and the upper rim of mm. Trapezoidei.

50. Sy. cervicocranialis

Program: 15 or 29.
Duration: 14-21 times, 30 minutes a day.
Application: 15mT. Apply to the C part of the spine and both shoulders.
Comment: In all cases, it is necessary to see an X-ray. It is suitable to give myo-relaxants, gentle manual massage of the spinal C muscles and the upper rim of mm. Trapezoidei.

51. Sy. lumbosacralis

Program: 17.
Duration: 14-21 therapy sessions of 30 minutes per session.
Application: 15mT for applicators other than solenoid. Use 10mT for solenoids. Place the applicator to the area of the pain source area (prolapse) and the other along n. ischiadicus.

52. Sy. vertebralis

(painful vertebral dysbalance syndrome)

Program: 15 or 24.
Duration: 30 minutes.
Application: triple cover,
program 15: max. 20mT for 30 minutes,
program 24: max. 18mT for 30 minutes.

53. Sy. vertebralis

(painful vertebral syndrome with muscle spasms, with nerve root stimulation)

Program: 8 or 30.
Duration: 30 minutes.
Application: triple cover,
program 8: max. 14mT for 30 minutes,
program 30: max. 20mT for 30 minutes.
Comment: Must be combined with medicinal therapy in the form of non-steroid antirheumatoid and myo-relaxants. Apply magnetotherapy to the spinal area with bed patients.

54. Tendopathia

Program: 15.
Duration: 30 minutes a day, 10 times.
Application: 11mT. Apply to the painful part of body.

55. Trigeminus facialis

Program: 5.
Duration: 30 minutes per session.
Application: 5-8mT. Apply disc.

56. Ulcus cruris

Program: 15.
Duration: 2-3 times a day for 30 minutes.
Application: max. 13mT, primarily small solenoid.
Comment: Long-term application for up to several months. Vasodilatation occurs and later neo-vascularisation creating an increased blood supply to the tissue and resultant improved saturation of the tissue with oxygen and nutriments. Visible improvement of tissue metabolism can be observed. A feeling of worsening, increased secretion and pain can temporarily occur. At the same time, protect the area around the ulcer with zinc paste in order to prevent maceration of the area due to increased secretion. Apply zinc paste into the ulcer with Arg. Nitrici and Peru balm. Vitamin D.

STOMATOLOGY

57. Appicitidis

Program: 1.
Duration: 10-21 daily therapy sessions for 30 minutes per session.
Application: max. 15mT for 15 minutes or max. 12mT for 30 minutes for disc,
max. 15mT for 15 minutes or max. 14mT for 30 minutes for ring.
Comment: Very effective for reducing or preventing inflammation. In many cases, there is no need to use antibiotics.

58. Dolor postextractionem

Program: 20.
Duration: 5-8 therapy sessions for 30 minutes.
Application: 8mT.

59. Parodontosis

Program: 8 or 11.
Duration: 10-21 therapy sessions, for 30 minutes per daily session.
Application: program 8 and 11: max. 15mT for 15 minutes or max. 12mT for 30 minutes for disc,
max. 15mT for 15 minutes or max. 14mT for 30 minutes for ring.
Comment: Very effective in early stages to decrease inflammation of the mucous membranes.

60. Periostitis

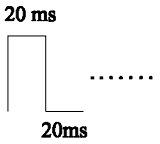
Program: 1.
Duration: 5-8 therapy sessions, for 30 minutes.
Application: 6mT.

Use of Applicators

Listed uses of applicators in clinical methodology serve only as a guideline. The use of each applicator depends not only upon the need to expose a given area, but also upon the patient's physical proportions, weight, and mobility (body position of the patient during a therapy is important). For example, it is not convenient to use a large solenoid when treating both hips of a heavy and bulky patient, and can cause even permanent damage to the applicator itself. You will find it more convenient to use two discs or an unfolded double cover.
However, once you have studied the space arrangements of an applicators' magnetic field, and after short-term experience in practical use, you will find the logical choice easy to make.

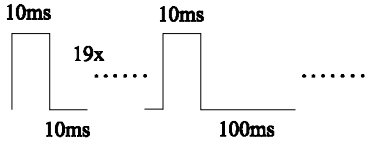
V. LIST OF PROGRAMS

Program 1:



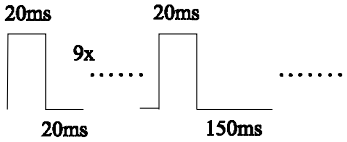
pulses 20ms with 20ms break (frequency 25Hz)

Program 2:



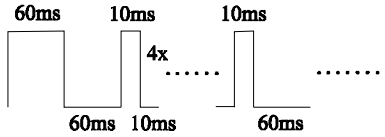
20x pulse 10ms with 10ms break, break 100ms

Program 3:



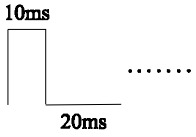
10x pulse 20ms with 20ms break, 150ms break

Program 4:



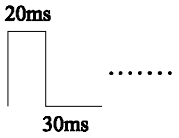
60ms pulse with 60ms break , 5x pulse 10ms with 10ms break, 60ms break

Program 5:



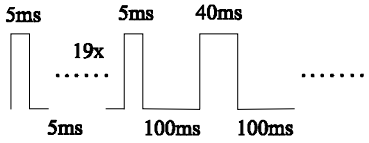
10ms pulses with 20ms break (frequency 33Hz)

Program 6:



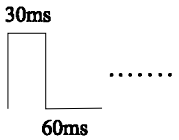
20ms pulses with 30ms break (frequency 20Hz)

Program 7:



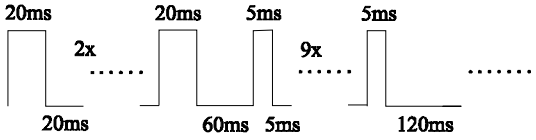
20x 5ms pulse with 5ms break, 100ms break, 40ms pulse with 100ms break

Program 8:



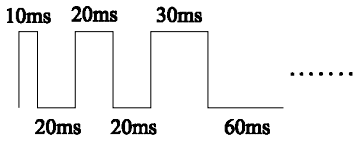
30ms pulse with 60ms break (frequency 11.1Hz)

Program 9:



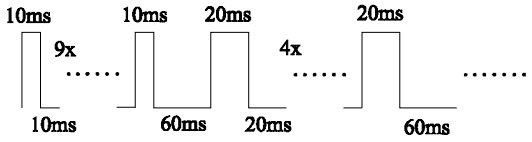
3x 20ms pulse with 20ms break, 60ms break, 10x 5ms pulse with 5ms break, 120ms break

Program 10:



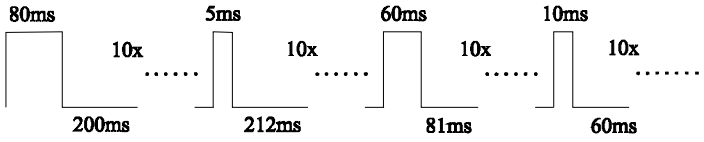
10ms pulse with 20ms break, 20ms pulse with 20ms break, 30ms pulse with 60ms break

Program 11:



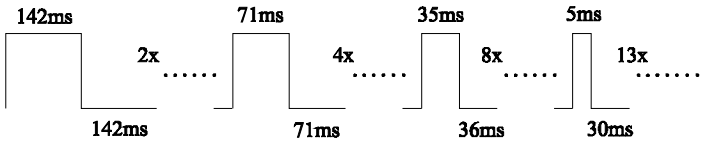
10x 10ms pulse with 10ms break, 60ms break, 5x 20ms pulse with 20ms break, 60ms break

Program 12:



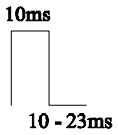
10x 80ms pulse with 200ms break (frequency 3.6Hz), 10x 5ms pulse with 212ms break (frequency 4.6Hz), 10x 60ms pulse with 81ms break (frequency 7.1Hz), 10x 10ms pulse with 60ms break (frequency 14.3Hz)

Program 13:



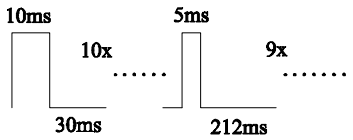
2x 142ms pulse with 142ms break (frequency 3.5Hz), 4x 71ms pulse with 71ms break (frequency 7Hz), 8x 35ms pulse with 36ms break (frequency 14Hz), 13x 5ms pulse with 30ms break (frequency 28.5Hz)

Program 14:



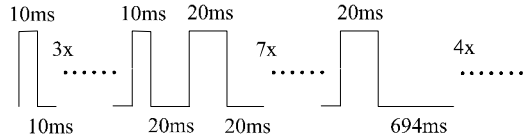
10ms pulse with 10 - 23ms break with repeating 120ms (frequency 30 - 50Hz)

Program 15:



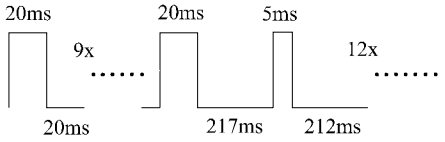
10x 10ms pulse with 30ms break (frequency 25Hz), 9x 5ms pulse with 212ms break (frequency 4.6Hz)

Program 16:



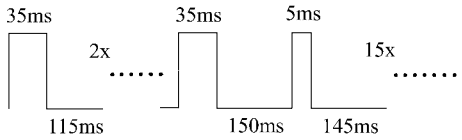
4x 10ms pulse with 10ms break (frequency 50Hz), 20ms break, 7x 20ms pulse with 20ms break (frequency 25Hz), 4x 20ms pulse with 694ms break (frequency 1.4Hz)

Program 17:



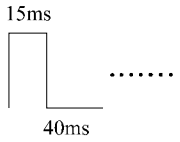
10x 20ms pulse with 20ms break (frequency 25Hz), 217ms, 12x 5ms pulse with 212ms break (frequency 4.6Hz)

Program 18:



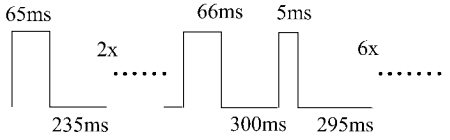
3x 35ms pulse with 115, 150 break, 15x 5ms pulse with 145ms break (frequency 6.6Hz)

Program 19:



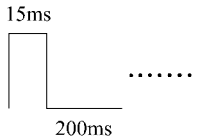
15ms pulse with 40ms break (frequency 18.2Hz)

Program 20:



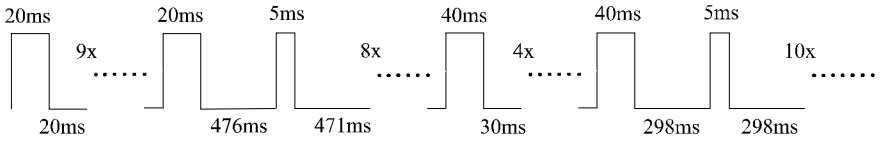
3x 65ms pulse with 235,300ms break, 6x 5ms pulse with 295ms break (frequency 3.3Hz)

Program 21:



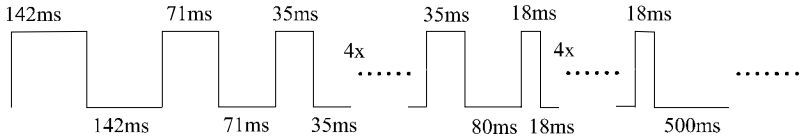
15ms pulse with 200ms break (frequency 4.6Hz)

Program 22:



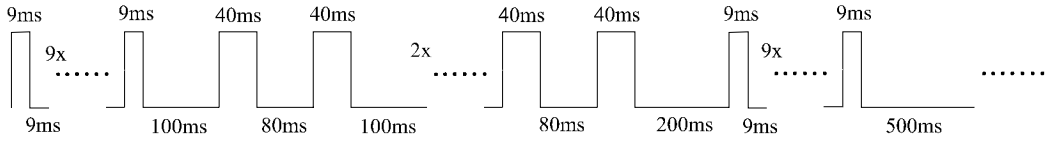
10x 20ms pulse with 20ms break, 476 break, 8x 5ms pulse with 471ms break, 4x 40ms pulse with 30ms break, 40ms pulse with 298ms break, 10x 5ms pulse with 298ms break

Program 23:



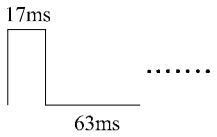
142ms pulse with 142ms break, 71ms pulse with 71ms break, 4x 35ms pulse with 35ms break, 35ms pulse with 80ms break, 4x 18ms pulse with 18ms break, 18ms pulse with 500ms break

Program 24:



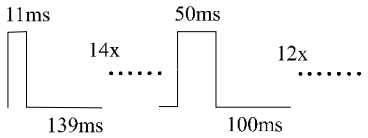
10x 9ms pulse with 9ms break, 100ms break, 40ms pulse with 80ms break, 2x 40ms pulse with 100ms break, 40ms pulse with 80ms break, 40ms pulse with 200ms break, 10x 9ms pulse with 9ms break, 500ms break

Program 25:



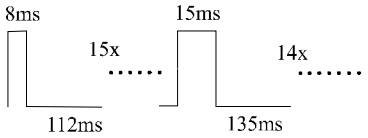
17ms pulse with 63ms break (frequency 12.5Hz)

Program 26:



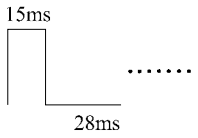
14x 11ms pulse with 139ms break (frequency 6.6Hz), 12x 50ms pulse with 100ms break (frequency 6.6Hz)

Program 27:



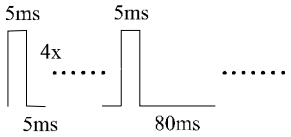
15x 8ms pulse with 112ms break (frequency 8,3Hz), 14x 15ms pulse with 135ms break (frequency 6.6Hz)

Program 28:



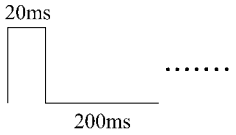
15ms pulse with 28ms break (frequency 23.25Hz)

Program 29:



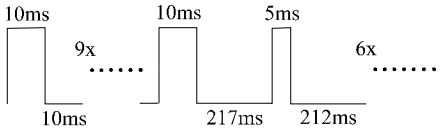
5x 5ms pulse with 5ms break (frequency 100Hz),80ms

Program 30:



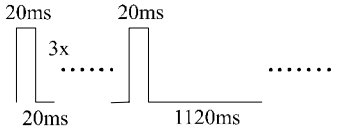
20ms pulse with 200ms break (frequency 4.5Hz)

Program 31:



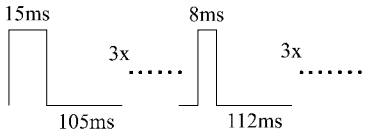
10x 10ms pulse with 10ms break, 217ms break, 6x 5ms pulse with 212ms break

Program 32:



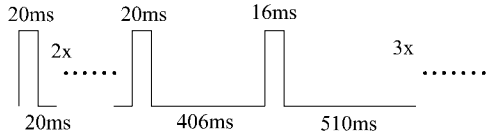
4x 20ms pulse with 20ms break (frequency 25Hz), 1120ms break

Program 33:



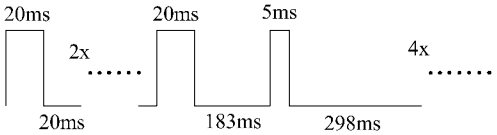
3x 15ms pulse with 105ms break (frequency 8.3Hz), 3x 8ms pulse with 112ms break (frequency 8.3Hz)

Program 34:



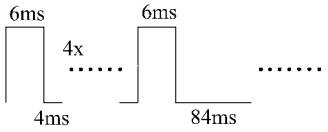
3x 20ms pulse with 20ms break (frequency 25Hz), 406ms, 3x 16ms pulse with 510ms break (frequency 1.9Hz)

Program 35:



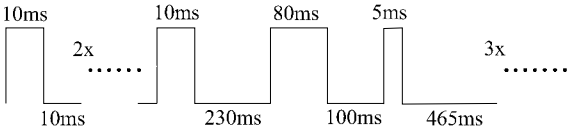
3x 20ms pulse with 20ms break (frequency 25Hz), 183ms break, 4x 5ms pulse with 298ms break (frequency 3.3Hz)

Program 36:



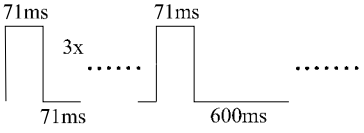
5x 6ms pulse with 4ms break, 84ms break

Program 37:



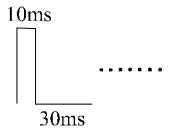
3x 10ms pulse with 10ms break, 230ms, 80ms pulse with 100ms break, 3x 5ms pulse with 465ms break

Program 38:



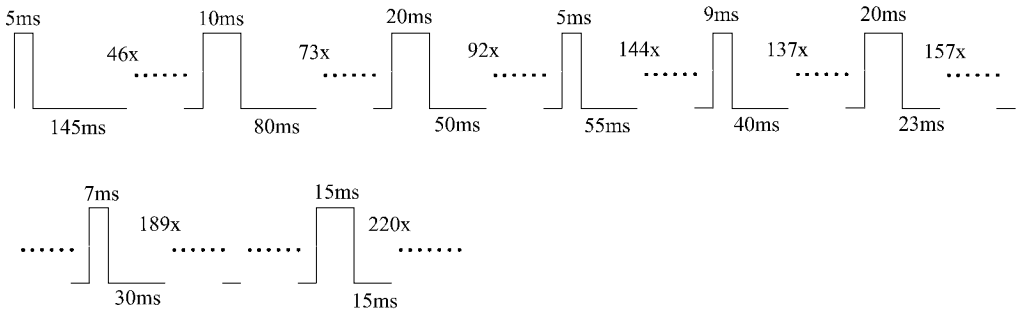
4x 71ms pulse with 71ms break, 600ms break

Program 39:



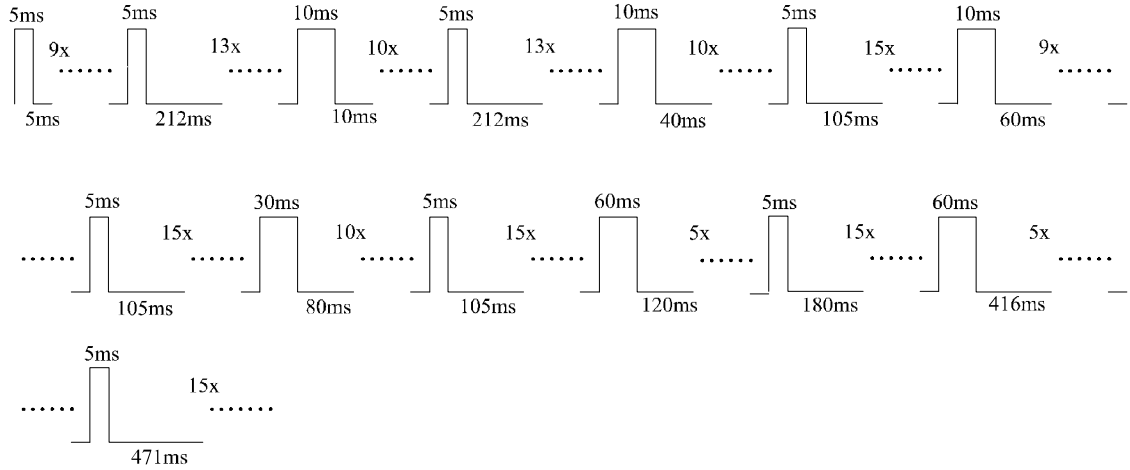
10ms pulse with 30ms break (frequency 25Hz)

Program 40:



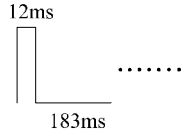
46x 5ms pulse with 145ms break (frequency 6.6Hz), 73x 10ms pulse with 80ms break (frequency 11.1Hz), 92x 20ms pulse with 50ms break (frequency 14.2Hz), 144x 5ms pulse with 55ms break (frequency 16.6Hz), 137x 9ms pulse with 40ms break (frequency 20.4Hz), 157x 20ms pulse with 23ms break (frequency 23.3Hz), 189x 7ms pulse with 30ms break (frequency 27Hz), 220x 15ms pulse with 15ms break (frequency 33.3Hz)

Program 41:



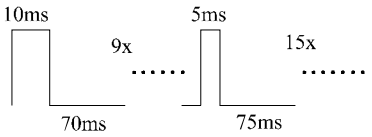
10x 5ms pulse with 5ms break, 212ms break, 10x 10ms pulse with 10ms break, 13x 5ms pulse with 212ms break, 10x 10ms pulse with 40ms break, 15x 5ms pulse with 105ms break, 9x 10ms pulse with 60ms break, 15x 5ms pulse with 105ms break, 10x 30ms pulse with 80ms break, 15x 5ms pulse with 105ms break, 5x 60ms pulse with 120ms break, 15x 5ms pulse with 180ms break, 5x 60ms pulse with 416ms break, 15x 5ms pulse with 471ms break

Program 42:



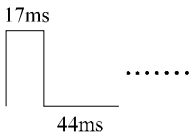
12ms pulse with 183ms break (frequency 5.1Hz)

Program 43:



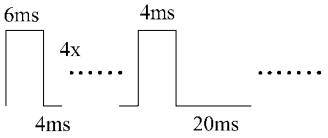
9x 10ms pulse with 70ms break, 15x 5ms pulse with 75ms break (frequency 12.5Hz)

Program 44:



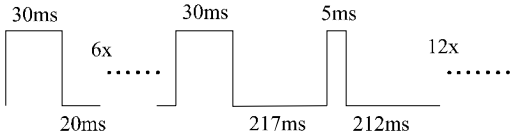
17ms pulse with 44ms break (frequency 16.4Hz)

Program 45:



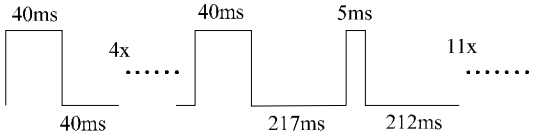
5x 6ms pulse with 4ms break, 20ms break

Program 46:



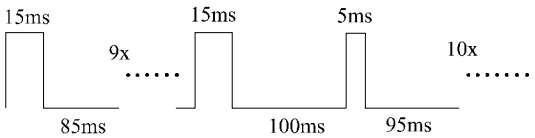
7x 30ms pulse with 20ms break, 217ms break, 12x 5ms pulse with 212ms break

Program 47:



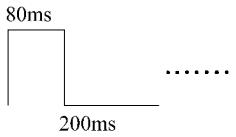
5x 40ms pulse with 40ms break, 217ms break, 11x 5ms pulse with 212ms break

Program 48:



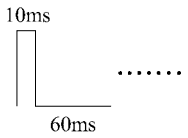
10x 15ms pulse with 85ms break, 100ms break, 10x 5ms pulse with 95ms break

Program 49:



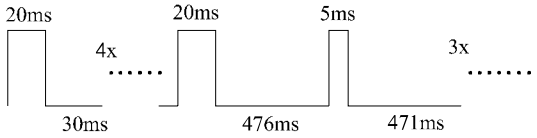
80ms pulse with 200ms break (frequency 3.6Hz)

Program 50:



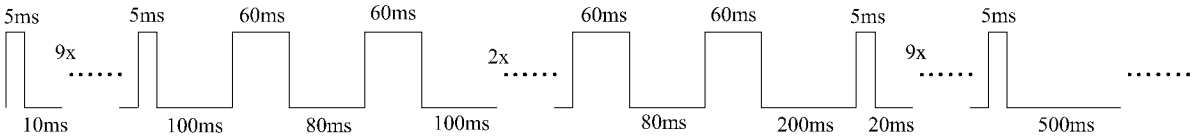
10ms pulse with 60ms break (frequency 14.2Hz)

Program 51:



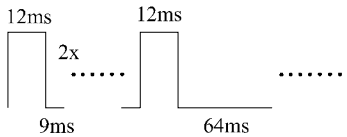
5x 20ms pulse with 30ms break (frequency 20Hz), 476ms break, 3x 5ms pulse with 471ms break (frequency 2.1Hz)

Program 52:



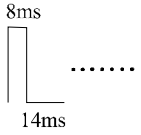
10x 5ms pulse with 10ms break (frequency 66.6Hz), 100ms, 60ms pulse with 80ms break, 60ms pulse with 100ms break, 60ms pulse with 80ms break, 60ms pulse with 200ms break, 10x 5ms pulse with 20ms break (frequency 40Hz), 500ms break

Program 53:



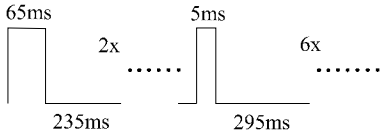
3x 12ms pulse with 9ms break (frequency 47.6Hz), 64ms break

Program 54:



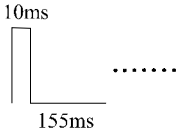
8ms pulse with 14ms break (frequency 45.5Hz)

Program 55:



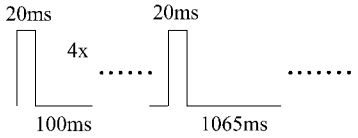
2x 65ms pulse with 235ms break (frequency 3.3Hz), 6x 5ms pulse with 295ms break (frequency 3.3Hz)

Program 56:



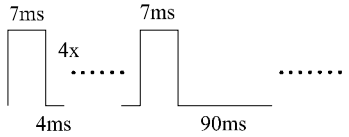
10ms pulse with 155ms break (frequency 6.1Hz)

Program 57:



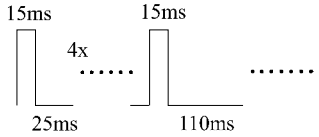
5x 20ms pulse with 100ms break (frequency 8.3Hz), 1065ms break

Program 58:



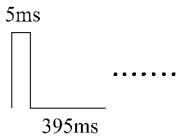
5x 7ms pulse with 4ms break, 90ms break

Program 59:



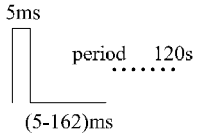
5x 15ms pulse with 25ms break, 110ms break

Program 60:



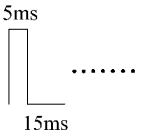
5ms pulse with 395ms break (frequency 2.5Hz)

Program 61:



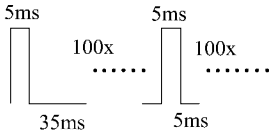
5ms pulse with (5-162)ms break (frequency 6 - 100Hz), 120s period

Program 62:



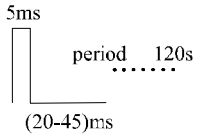
5ms pulse with 15ms break (frequency 50Hz)

Program 63:



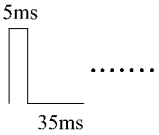
100x 5ms pulse with 35ms break (frequency 25Hz), 100x 5ms pulse with 5ms break (frequency 100Hz)

Program 64:



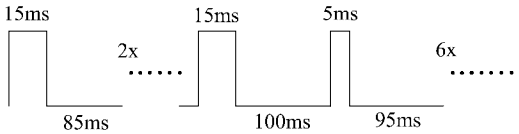
5ms pulse with (20-45)ms break (frequency 20 - 40Hz), 120s period

Program 65:



5ms pulse with 35ms break (frequency 25Hz)

Program 66:



3x 15ms pulse with 85ms, 100ms, 6x 5ms pulse with 95ms break (frequency 10Hz)

This product is manufactured in accordance with the EU Medical Devices Directive by:

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